

## **Indoor Distribution Test Report**

# **Spectrum Lighting Inc.**

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## **Spectrum Lighting Photometric Lab**

### **Luminaire**

CK0407PC 20L 35K WD xx NL xx MW  
Nom. 4.5" Diam x 7"H Round Cylinder, Wide Beam

### **Test Number**

SP-01443\_M-20L

### **Test Date**

11/23/2022

The results contained in this report pertain only to this IES file.

### Summary of Results

#### Power

Input Watts	13.2 W
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#### Lumen Output

Output Lumens	1457
Efficacy	110.39 lm/W

#### Luminous Dimensions

0° - 180° Size	-0.38
90° - 270° Size	-0.38
Height	0

#### Spacing Criterion

Two luminaires, plane 0°	0.59
Two luminaires, plane 90°	0.59
Four luminaires	0.63

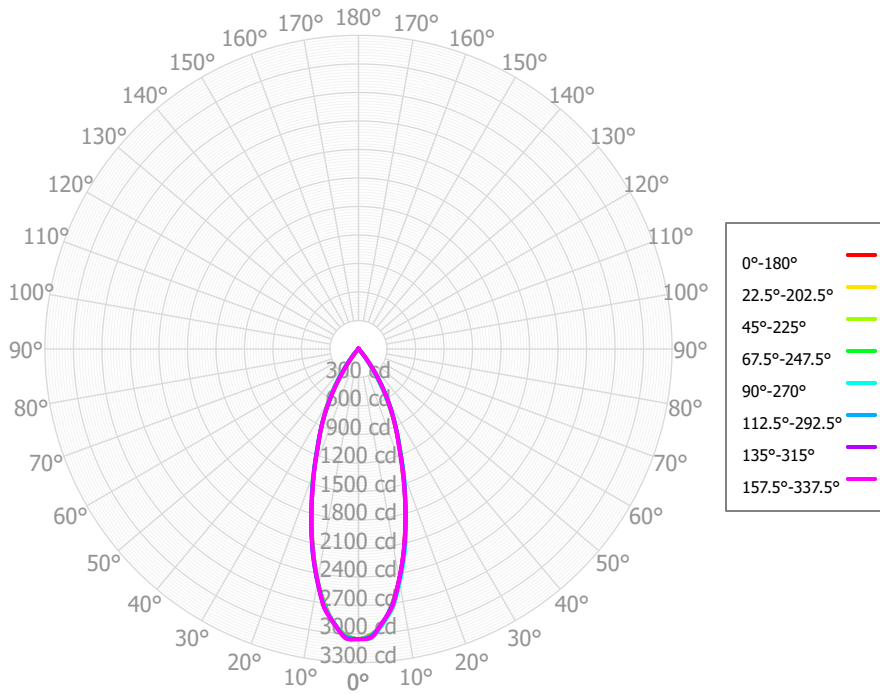
#### Full Beam Angle

0° - 180°	37°
90° - 270°	37°

### IES File Header Contents

Keyword	Value
TEST	SP-01443_M-20L
TESTLAB	Spectrum Lighting Photometric Lab, VLS-245-981
MANUFAC	Spectrum Lighting
TESTDATE	11/23/2022
ISSUEDATE	11/23/2022
LUMCAT	CK0407PC 20L 35K WD xx NL xx MW
LUMINAIRE	Nom. 4.5" Diam x 7"H Round Cylinder, Wide Beam
OTHER	No lens, Matte White finish
OTHER	37 Degree Beam Angle
OTHER	Reference Project SL378
LAMP	N/A
LAMPCAT	N/A, Min. 80 CRI
OTHER	Total Luminaire Watts is approximate
OTHER	CCT Multipliers: 27K x 0.95, 30K x 0.97, 40K x 1.03
OTHER	This report prepared by Spectrum Lighting

**Candela Polar Plot**



**Zonal Lumen Summary**

Zone	Lumens	% Fixture	Zone	Lumens	% Fixture
0.00° - 10.00°	266.79	18.31%	90.00° - 100.00°	2.27	0.16%
10.00° - 20.00°	524.18	35.97%	100.00° - 110.00°	2.11	0.14%
20.00° - 30.00°	428.71	29.42%	100.00° - 120.00°	4.18	0.29%
30.00° - 40.00°	181.82	12.48%	120.00° - 130.00°	1.88	0.13%
40.00° - 50.00°	20.69	1.42%	130.00° - 140.00°	1.63	0.11%
50.00° - 60.00°	7.65	0.53%	140.00° - 150.00°	1.45	0.10%
60.00° - 70.00°	6.50	0.45%	150.00° - 160.00°	1.15	0.08%
70.00° - 80.00°	4.71	0.32%	160.00° - 170.00°	0.67	0.05%
80.00° - 90.00°	2.66	0.18%	170.00° - 180.00°	0.22	0.02%
0.00° - 90.00°	1443.71	99.08%	0.00° - 180.00°	1457.15	100.00%

### Candela Distribution

	0.00°	22.50°	45.00°	67.50°	90.00°	112.50°	135.00°	157.50°	180.00°	202.50°	225.00°	247.50°	270.00°	292.50°	315.00°	337.50°	360.00°
0.00°	3053.62	3053.62	3053.62	3053.62	3053.62	3053.62	3053.62	3053.62	3053.62	3053.62	3053.62	3053.62	3053.62	3053.62	3053.62	3053.62	3053.62
2.50°	3010.17	3023.08	3011.51	3018.83	3047.04	3026.30	3048.04	3047.04	3016.43	3031.79	3017.09	3031.10	3035.36	3023.99	3035.98	3039.93	3010.17
5.00°	2906.88	2897.11	2908.73	2901.28	2908.06	2909.90	2905.58	2904.76	2912.30	2902.16	2912.94	2905.77	2896.58	2896.72	2889.28	2889.59	2906.88
7.50°	2706.67	2725.73	2715.63	2729.49	2751.85	2737.06	2753.53	2747.65	2715.72	2731.00	2720.72	2728.68	2734.22	2716.67	2725.03	2734.13	2706.67
10.00°	2463.96	2470.70	2479.25	2479.41	2495.08	2490.45	2486.82	2478.75	2481.06	2478.65	2487.22	2478.39	2474.65	2472.45	2463.25	2462.95	2463.96
12.50°	2188.35	2202.04	2204.70	2208.15	2230.78	2219.05	2216.44	2205.75	2195.98	2202.53	2203.14	2199.09	2208.50	2199.67	2196.48	2190.98	2188.35
15.00°	1901.14	1912.61	1915.32	1911.38	1933.59	1920.54	1918.43	1910.27	1910.83	1917.36	1920.37	1916.87	1921.44	1918.94	1908.37	1904.74	1901.14
17.50°	1622.78	1631.36	1636.79	1631.23	1635.81	1635.80	1622.82	1621.45	1625.61	1630.07	1639.00	1633.70	1640.82	1635.25	1626.20	1620.99	1622.78
20.00°	1346.88	1360.82	1361.60	1368.34	1383.76	1363.67	1369.00	1359.62	1366.16	1371.18	1375.18	1374.06	1377.04	1378.15	1363.52	1360.47	1346.88
22.50°	1130.69	1129.24	1142.95	1140.42	1135.34	1136.08	1122.59	1117.25	1131.31	1117.11	1126.90	1120.40	1136.30	1128.85	1123.60	1111.34	1130.69
25.00°	927.55	940.30	938.29	942.94	948.25	943.64	944.01	938.18	933.65	939.73	929.25	939.49	944.42	946.80	942.82	935.90	927.55
27.50°	756.53	759.20	755.86	750.49	761.17	757.09	765.53	760.85	766.61	770.97	769.04	772.27	767.84	779.77	767.18	762.44	756.53
30.00°	590.53	585.27	577.48	561.69	574.28	574.41	587.67	588.03	598.41	602.17	608.96	614.37	617.89	617.89	602.71	598.14	590.53
32.50°	431.61	422.44	413.14	395.91	393.72	409.02	415.70	422.59	429.40	433.38	448.95	457.76	468.43	456.88	444.31	437.25	431.61
35.00°	273.40	268.38	250.66	244.48	253.09	253.35	270.62	272.57	284.15	291.89	306.69	316.46	319.69	314.19	296.72	288.36	273.40
37.50°	164.85	155.34	148.58	140.32	127.93	149.02	144.09	150.96	152.43	152.83	173.73	176.43	194.39	173.57	173.38	158.71	164.85
40.00°	59.13	69.35	51.27	60.50	72.68	68.36	81.85	79.71	80.35	89.39	96.59	105.77	98.21	98.82	85.94	84.06	59.13
42.50°	37.78	30.02	31.52	28.20	27.89	34.72	33.30	32.45	37.12	29.29	44.16	37.70	40.28	28.61	31.13	28.92	37.78
45.00°	17.71	16.56	14.21	15.85	20.60	18.60	22.12	20.48	20.14	20.45	23.45	24.13	22.69	19.90	17.83	18.60	17.71
47.50°	13.93	11.29	12.00	11.79	14.52	13.37	13.84	13.39	13.46	12.36	14.04	11.16	12.73	12.59	10.64	11.21	13.93
50.00°	10.34	9.81	9.86	10.62	11.85	11.48	12.18	12.32	10.36	10.59	10.33	10.06	9.61	10.54	9.96	9.51	10.34
52.50°	9.16	8.86	8.98	9.66	9.92	10.33	10.84	11.12	8.38	8.90	8.21	8.95	8.02	8.59	8.91	8.29	9.16
55.00°	8.01	8.13	8.19	8.76	9.70	9.36	10.11	9.79	7.74	7.65	7.46	7.75	7.58	8.36	7.55	7.83	8.01
57.50°	7.14	7.88	8.24	8.01	9.51	9.02	9.12	8.62	7.44	6.61	7.02	6.63	7.15	8.03	6.63	7.43	7.14
60.00°	6.48	7.79	8.23	7.30	9.36	8.80	7.73	7.60	6.91	6.53	6.39	6.01	6.72	6.94	6.04	7.12	6.48
62.50°	7.00	7.54	7.83	7.61	8.85	8.27	6.89	7.03	6.34	6.41	5.74	5.49	6.49	6.00	5.97	6.77	7.00
65.00°	7.24	7.24	7.35	8.08	7.76	7.71	6.79	6.80	5.78	6.15	5.70	5.52	6.36	5.90	6.22	6.38	7.24
67.50°	6.29	6.74	6.44	6.80	6.64	7.30	6.55	6.31	5.24	5.77	5.73	5.49	6.04	5.78	6.24	5.85	6.29
70.00°	5.51	6.20	5.65	5.35	5.48	6.90	6.15	5.67	5.28	5.07	5.57	5.21	5.65	5.65	6.13	5.19	5.51
72.50°	5.22	5.51	5.24	4.51	4.57	5.65	5.44	5.01	5.38	4.48	5.41	4.94	5.40	5.42	5.43	4.71	5.22
75.00°	4.76	4.80	4.60	3.71	3.93	4.39	4.43	4.35	4.51	4.16	4.43	4.67	5.20	4.87	4.45	4.39	4.76
77.50°	3.87	4.02	3.29	3.09	3.50	4.01	3.71	3.84	3.62	3.72	3.46	4.28	4.57	4.36	3.62	3.84	3.87
80.00°	3.15	3.23	2.28	2.48	3.26	3.60	3.21	3.41	3.06	3.05	3.26	3.56	3.82	3.93	2.85	3.14	3.15
82.50°	2.77	2.47	1.99	2.21	2.84	2.95	2.61	2.89	2.53	2.47	3.03	3.00	3.16	3.36	2.69	2.63	2.77
85.00°	2.43	1.72	1.82	1.98	2.28	2.36	1.94	2.34	2.30	2.03	2.59	2.75	2.52	2.52	2.71	2.23	2.43
87.50°	2.14	1.90	1.89	2.21	1.99	2.42	1.78	2.12	2.07	1.81	2.20	2.45	2.23	2.01	2.59	2.06	2.14
90.00°	2.00	2.07	1.96	2.36	1.89	2.45	1.90	2.00	1.87	1.86	2.20	2.07	2.00	2.09	2.43	2.00	2.00
92.50°	2.07	2.00	2.02	1.94	1.93	2.27	1.96	2.15	1.68	2.03	2.15	2.08	2.11	2.18	2.12	1.95	2.07
95.00°	2.15	1.95	2.11	1.61	2.07	2.14	1.98	2.37	1.61	2.31	1.86	2.65	2.26	2.27	1.78	1.91	2.15
97.50°	2.23	2.06	2.23	1.80	2.14	2.24	1.94	2.35	1.58	2.29	1.64	2.79	2.32	2.29	1.91	2.03	2.23
100.00°	2.23	2.18	2.16	1.93	2.18	2.27	1.87	2.30	1.75	1.98	1.70	2.45	2.37	2.22	2.09	2.19	2.23

CK0407PC 20L 35K WD xx NL xx MW

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### Coefficients of Utilization – Zonal Cavity Method

Values are lumens delivered to the workplane.

<b>RCR</b>	<b>pfc</b>	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	0%
	<b>pcc</b>	80%	80%	80%	80%	70%	70%	70%	70%	50%	50%	50%	30%	30%	30%	10%	10%	10%	0%
	<b>pw</b>	70%	50%	30%	10%	70%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	30%
	<b>0</b>	1732	1732	1732	1732	1690	1690	1690	1690	1612	1612	1612	1540	1540	1540	1475	1475	1475	1444
	<b>1</b>	1658	1621	1588	1558	1621	1589	1559	1532	1527	1504	1482	1471	1453	1436	1420	1406	1392	1377
	<b>2</b>	1587	1523	1470	1426	1555	1497	1450	1409	1449	1410	1376	1404	1373	1345	1363	1338	1315	1311
	<b>3</b>	1520	1436	1372	1321	1491	1416	1357	1309	1376	1327	1287	1340	1299	1265	1307	1273	1245	1248
	<b>4</b>	1456	1359	1287	1233	1430	1342	1276	1225	1310	1254	1210	1280	1233	1194	1252	1212	1180	1190
	<b>5</b>	1395	1288	1214	1158	1372	1274	1205	1153	1248	1188	1142	1223	1171	1131	1200	1156	1120	1135
	<b>6</b>	1338	1224	1148	1093	1317	1213	1141	1089	1191	1128	1081	1170	1115	1073	1151	1103	1065	1083
	<b>7</b>	1284	1166	1089	1036	1266	1156	1084	1033	1138	1073	1026	1120	1063	1020	1104	1053	1014	1035
	<b>8</b>	1234	1113	1036	984	1217	1104	1032	982	1088	1023	977	1073	1015	972	1059	1007	968	991
	<b>9</b>	1186	1063	988	937	1171	1056	985	936	1042	978	932	1030	971	928	1017	964	925	949
	<b>10</b>	1141	1018	944	895	1128	1012	941	894	1000	935	891	989	930	888	978	924	885	911

### Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	100.9 fc	3.7 ft
6.5 ft	72.3 fc	4.3 ft
7.5 ft	54.3 fc	5.0 ft
8.0 ft	47.7 fc	5.3 ft
10.0 ft	30.5 fc	6.7 ft
12.0 ft	21.2 fc	8.0 ft
14.0 ft	15.6 fc	9.3 ft
16.0 ft	11.9 fc	10.7 ft
20.0 ft	7.6 fc	13.3 ft
24.0 ft	5.3 fc	16.0 ft
28.0 ft	3.9 fc	18.6 ft

### Average Luminaire Luminance [cd/m²]

	0.00°	45.00°	90.00°
<b>0.00°</b>	289820	289820	289820
<b>45.00°</b>	2377	1907	2765
<b>55.00°</b>	1325	1355	1605
<b>65.00°</b>	1626	1651	1743
<b>75.00°</b>	1746	1688	1442
<b>85.00°</b>	2644	1980	2484

### UGR CIE 190:2010

Ceiling reflectance		0.7	0.7	0.5	0.5	0.3	0.7	0.7	0.5	0.5	0.3
Wall reflectance		0.5	0.3	0.5	0.3	0.3	0.5	0.3	0.5	0.3	0.3
Plane reflectance		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Room dimensions		Viewed crosswise					Viewed endwise				
2H	2H	1.2	2.1	1.6	2.4	2.8	1.6	2.5	2.0	2.8	3.2
	3H	3.7	4.5	4.2	4.9	5.3	4.0	4.8	4.4	5.2	5.6
	4H	4.9	5.6	5.3	6.0	6.4	5.0	5.7	5.4	6.1	6.5
	6H	5.7	6.4	6.2	6.8	7.2	6.0	6.6	6.4	7.0	7.5
	8H	6.1	6.7	6.6	7.2	7.6	6.4	7.0	6.9	7.5	7.9
	12H	6.5	7.1	7.0	7.5	8.0	6.8	7.5	7.3	7.9	8.3
4H	2H	2.0	2.8	2.4	3.1	3.5	2.2	2.9	2.6	3.3	3.7
	3H	4.7	5.3	5.2	5.8	6.2	4.9	5.5	5.3	5.9	6.4
	4H	5.9	6.5	6.4	6.9	7.4	6.0	6.6	6.5	7.0	7.5
	6H	6.9	7.4	7.4	7.9	8.4	7.2	7.6	7.7	8.1	8.6
	8H	7.4	7.8	7.9	8.3	8.8	7.7	8.1	8.2	8.6	9.1
	12H	7.9	8.3	8.4	8.8	9.3	8.2	8.6	8.7	9.1	9.6
8H	4H	6.3	6.7	6.8	7.2	7.7	6.4	6.8	6.9	7.3	7.8
	6H	7.4	7.8	8.0	8.3	8.8	7.7	8.1	8.3	8.6	9.1
	8H	8.0	8.3	8.6	8.9	9.4	8.4	8.7	9.0	9.2	9.8
	12H	8.7	8.9	9.2	9.5	10.1	9.1	9.4	9.7	9.9	10.5
12H	4H	6.3	6.7	6.8	7.2	7.7	6.4	6.8	6.9	7.3	7.8
	6H	7.5	7.8	8.1	8.3	8.9	7.8	8.1	8.4	8.6	9.2
	8H	8.2	8.4	8.7	9.0	9.6	8.6	8.9	9.2	9.4	10.0

Corrected UGR values based on total output energy  
 SHR = 1.0

Corrected UGR values based on total output lumens

SHR = 1.0